

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 3, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Daniel B. Bullen, Ph.D., P.E., Cognizant Engineer
SUBJECT: Lawrence Livermore National Laboratory (LLNL) Report for August 2021

Building 334 Documented Safety Analyses (DSA) and Technical Safety Requirements (TSR) 2020 Annual Update: On August 11, 2021, the Livermore Field Office (LFO) approved the 2020 Annual Update to the Hardened Engineering Test Building, Building 334, DSA and TSR. In the 2020 Annual Update, Lawrence Livermore National Security, LLC, (LLNS) updated a chemical inventory table to list broad categories instead of specific chemicals and amounts for consistency with the other Superblock DSAs, determined the appropriate chemical hazard categorization, and updated the discussion in the DSA. LFO concluded that the updated safety basis documents are sufficient and appropriate to serve as the basis for the safe operation of Building 334 and required LLNS to implement the updated DSA and TSRs within 90 days.

Building 332 DSA and TSR Page Changes for the Recovery Glovebox Line (RGL): On August 16, 2021, LFO approved page changes to the Plutonium Facility, Building 332, DSA and TSR. The page changes address, among other things, LFO's concerns with the RGL ion exchange resin purity and the subsequent effects on the accident analysis (see LLNL Monthly Report for July 2021). The previous RGL TSR design feature used the term "demonstrated equivalent stability" of the resin. The LLNS submittal resolved this concern by specifying the resin as being characterized by previous acceptance testing at the Savannah River Site. LFO directed LLNS to enter their correspondence and the associated Safety Evaluation Report into the Building 332 safety basis, effective immediately, and required LLNS to implement the updated DSA and TSR within 90 days.

Implementation Plan (IP) for Contractor Readiness Assessment (CRA) of the Centralized Waste Processing Line (CWPL): On August 13, 2021, LLNS provided LFO the IP for the restart of the CWPL in Building 332. The IP addresses the scope for the CRA defined in the Plan of Action (see LLNL Monthly Report for April 2021). Operations in the CWPL include handling transuranic (TRU) waste containers, bagging waste into and out of the glovebox, visually examining, sorting, and segregating waste, and repackaging TRU waste, along with standard glovebox maintenance (e.g., surveillances, housekeeping, glove changes). LLNS noted that the CRA will assess the readiness of the CWPL glovebox, CWPL operators, and the authorizing work documents to conduct glovebox operations safely and in compliance with the Building 332 safety basis, as well as Department of Energy and LLNL requirements. The CRA is currently scheduled for October 2021.

Building 332 – Evaluation of Safety of the Situation (ESS) Related to Reduced Flowrate Densities for Several Sprinklers in Room 1009: On August 25, 2021, the Building 332 Facility Manager issued an ESS to address a potential inadequacy of the safety analysis (PISA) in response to an EA-31 Fire Protection Follow-up Assessment regarding reduced flowrate densities for several of the sprinklers in Room 1009 in Building 332. On August 4, 2021, LLNS prepared a backward-looking unreviewed safety question determination (USQD) to evaluate the PISA. The affected sprinklers in Room 1009 are part of the Defense-in-Depth Equipment Important to Safety portion of the fire suppression system. The USQD was negative based on water pressure measurements of 70–75 pounds per square inch from the LLNL domestic water supply that would provide the minimum flow rates for the fire suppression system.